REBUTTAL TESTIMONY

OF

JAMES W. NEELY, P.E.

ON BEHALF OF

DOMINION ENERGY SOUTH CAROLINA, INC.

DOCKET NO. 2020-125-E

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND POSITION.

A. My name is James W. Neely and my business address is 220 Operation Way, Cayce, South Carolina. I am employed by Dominion Energy South Carolina, Inc. ("DESC" or the "Company") as a Senior Resource Planning Engineer.

Q. HAVE YOU PREVIOUSLY SUBMITTED DIRECT TESTIMONY IN THIS PROCEEDING?

A. No.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. The purpose of my rebuttal testimony is to respond in part to the direct testimony of Elizabeth A. Stanton, PhD on behalf of the Sierra Club.

In her direct testimony she states that Wateree, Williams, and Cope coal plants each generate revenue that is less than their expenses. I will show

that her analysis was based on faulty data and assumptions and provide some accurate, alternative methods of calculating the difference between plant value and plant cost.

Q. WHAT IS YOUR RESPONSE TO YOUR REVIEW OF THE REVENUE ANALYSIS OF ELIZABETH A. STANTON, PHD ON BEHALF OF THE SIERRA CLUB?

A. Plant revenue is not an appropriate measure of plant value in a system that does not participate in an organized competitive power market. DESC does not participate in an organized competitive power market, such as PJM, and therefore there are no capacity and energy markets to measure plants against.

Q. DOES THE PROSYM MODEL ACCURATELY CALCULATE ENERGY AND CAPACITY REVENUE?

A. No, because as stated previously, DESC does not participate in an organized competitive power market and therefore PROSYM does not have the inputs to accurately calculate plant revenue. Instead, PROSYM used marginal system cost to calculate plant revenue. This is not an accurate measure of plant value or plant revenue but rather an indication of system costs. Marginal cost is not a measure of system or plant revenue. System revenue is produced by the rates that we charge our customers, and those rates must be higher than marginal costs if we are to stay in business.

Q. WHY WERE DATA LABELED "REVENUE" INCLUDED IN THE PROSYM MODELING RUNS PROVIDED TO THE SIERRA CLUB?

A. The Utility Revenue Report is one of the standard reports output from PROSYM. All standard reports were provided to all intervenors in the Integrated Resource Plan docket. Because of the reasons already mentioned, this report is only useful as a summary of annual plant costs.

Q. DOES DESC RELY ON THIS DATA IN ANY WAY?

A. No. The Utility Revenue Report is not used, and it is not relevant for DESC's system.

Q. ARE THERE PROBLEMS WITH USING MARGINAL COSTS TO CALCULATE PLANT REVENUE AS DR. STANTON HAS DONE?

A. Yes. First, using marginal cost as a measure of plant revenue leads to a wrong conclusion. It would eliminate as non-economic all but five of the plants reflected in our system modeling including all solar generation. Only Jasper, the Columbia Energy Center, Saluda Hydro, Fairfield Pumped Storage and the Run of River Hydro plants have marginal costs higher than their operating costs under this analysis. These five plants have a total capacity of 2155 megawatts ("MW"). Under Dr. Stanton's analysis, DESC would be left with 2155 MW of capacity to meet loads that exceed 2155 MW every day and approach 5000 MW on high load days.

Q. ARE THERE OTHER WAYS TO CALCULATE PLANT VALUE WITHOUT USING PLANT REVENUE?

A. Yes. Replacement cost is a normal way to calculate plant value where plant revenue data is not available.

Q. WHAT IS THE VALUE OF THESE COAL PLANTS USING NEW COMBINED CYCLE GAS AS A REPLACEMENT COST?

A. Combined cycle gas plants are the units that are closest in operating characteristics to coal units. Using the capital costs of a new combined cycle plant to approximate the capacity value at Wateree, Williams and Cope shows the value of these plants exceeds their costs by a wide margin. In table 4 of Dr. Stanton's direct testimony, she indicates revenue for Wateree and Williams based only on marginal costs. Using a new combined cycle plant as the basis for valuation, the ***annual*** replacement capacity costs of Wateree is $137.9 million ($1406/kilowatts ("kW")[1] x 14.34% Fixed Charge Rate ("FCR") x 684,000 kW). The annual replacement capacity costs of Williams is $123 million ($1406/kW x 14.34% FCR x 610,000 kW). The annual replacement capacity costs of Cope is $82.7 million ($1406/kW x 14.34% FCR x 410,000 kW). Assuming the lower combined cycle energy costs of $20.23/MWh, the energy value for Williams is $59.4 million (2934.47 GWh x $20.23/MWh). The annual energy value for Wateree is $34.7 million

[1] This value is taken from the *Restated and Supplemented Version of Chapter II.B.5 of the Dominion Energy South Carolina, Inc. 2020 IRP*, page 4.

(1712.89 GWh x $20.23/MWh). The annual energy value for Cope is $15.8 million (781.02 GWh x $20.23/MWh). Therefore, when valued at the cost of replacement of combined cycle gas generation capacity, the three coal plants have an ***annual*** capacity value of approximately $340 million and an ***annual*** energy and capacity value of approximately $450 million. The capital expenditures that Dr. Stanton alleges to be uneconomical averaged $50 million per year from 2012 to 2020. If the capacity value of Wateree, Williams and Cope are added to the combined cycle based energy costs, then plant value exceeds costs in the near term and the table would look similar to the following.

Table A

Valuing Wateree, Cope and Williams Based on Combined Cycle Replacement Capacity

(millions)	Wateree	Williams	Cope
	2020	2020	2020
Plant Costs	$83.4	$117.9	$41.3
Plant Energy Value	$34.7	$59.4	$15.8
Plant Capacity Value	$137.9	$123.0	$82.7
Total Plant Value	$172.6	$182.4	$98.5
Plant Value/Plant Costs (%)	206.9%	154.7%	238.5%

Q. WHAT IS THE VALUE OF THESE COAL PLANTS USING PURCHASE CAPACITY AS A REPLACEMENT COST?

A. Another more conservative estimate of plant capacity is the cost of purchasing capacity costs off system. Such capacity purchases are lower cost in the short-term, but their availability year to year is uncertain and the

transmission to deliver them to our system is often not available in peak load periods. But assuming that the capacity of these units could be replaced from market purchases, although this is not in fact practical, the estimated annual market capacity value would be $73.8 million for Wateree, $65.9 million for Williams and $44.3 million for Cope as shown in the table below.

Table B

Replacing Wateree, Cope and Williams with Off-System Capacity Purchases

	Market Capacity Costs ($/kW-month)	Transmission Costs ($/kW-month)	Months	kW	Estimated Annual Capacity Replacement Costs
Wateree	$6	$3	12	684,000	$73.8M
Williams	$6	$3	12	610,000	$65.9M
Cope	$6	$3	12	410,000	$44.3M

This produces an annual capacity value of $184 million, or more than three times the annual capital expenditures that Dr. Stanton challenges. Even at this low but impractical valuation of capacity, the plants are still quite economical. See the value and cost comparison in the table on the following page.

Table C

Valuing Wateree, Cope and Williams Based on Off-System Capacity Purchases

(millions)	Wateree	Williams	Cope
	2020	2020	2020
Plant Costs	$83.4	$117.9	$41.3
Plant Energy Value	$48.4	$79.9	$18.1
Plant Capacity Value	$73.8	$65.9	$44.3
Total Plant Value	$122.2	$145.8	$62.4
Plant Value/Plant Costs (%)	146.5%	123.7%	151.1%

Q. WHAT IS THE VALUE OF THESE COAL PLANTS USING NEW RENEWABLES AS A REPLACEMENT COST?

A. Using solar and battery storage to calculate replacement costs (an alternative Dr. Stanton mentions) provides the following comparison. In this calculation, the energy produced by these units is replaced by a solar Power Purchase Agreement ("PPA") that assumes a 28% capacity factor and uses DESC's current avoided cost, which is approximately $30/megawatt-hour ("MWh"). The capacity that these plants represent is replaced with 4-hour battery storage at $229.2/kW-yr ($1394/kW[2] x 15.05% FCR + 24.70[1]/kW-yr fixed O&M). Under this analysis, the replacement value of the capacity represented by these three plants is $565 million per year, or more than eleven times the $50 million a year in capital expenditures which Dr. Stanton challenges.

[2] See footnote 1, above.

Table D

Valuing Wateree, Cope and Williams Based on Solar + Battery Capacity

	Wateree	Williams	Cope
5 Year Average Projected Energy (MWh)	1,564,559	2,701,018	1,544,430
Coal MW	684	610	410
5 Year Average Projected Plant Costs ($M)	$92.37	$124.01	$70.88
Solar MW needed	638	1101	630
Battery MW needed	684	610	410
Solar – PPA ($30/MWh) Replacement Energy Cost ($M)	$46.94	$81.03	$46.33
Battery - Annual Replacement Capacity Costs ($M)	$156.77	$139.81	$93.97
Plant Value	$203.71	$220.84	$140.3
Plant Value/Plant Costs (%)	220.5%	178.1%	197.9%

Replacing these coal plants with renewables provides the greatest difference between costs and value and further highlights the benefits that these plants provide.

Q. WHAT ARE YOUR CONCLUSIONS?

A. It's not appropriate to calculate plant revenue when no organized competitive power market for energy and capacity exists. Using only marginal costs to calculate plant value grossly understates their value. As shown in the previous calculations, Wateree, Williams and Cope plants currently have value that exceeds their operating costs.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes.